What is claimed is:

1. A motor, comprising:

a rotor, comprising a plurality of first rotator portions, each having a permanent magnet, and one or a plurality of second rotator portions, each having magnetic saliency, said first and second rotator portions been arranged adjacent to each other in a direction of a rotating shaft; and

a stator which generates a magnetic field for driving said rotor when electric current is supplied.

2. The motor according to claim 1, wherein said plurality of first rotator portions are not arranged adjacent to each other.

3. The motor according to claim 1, wherein said first rotator portion and said second rotator portion are magnetically combined.

4. The motor according to claim 1,

wherein said second rotator portion has a shape of having a plurality of inverted-circular arc-shaped notches on a circumferential portion of a circular plate or a cylindrical column, and

a full or partial contour portion of said notch is provided at a position whereat said full or partial contour portion opposes to said permanent magnet.

5. The motor according to claim 1, wherein said first rotator portion and said second rotator portion are arranged adjacent to each other in such a manner that current phases for generating their both maximum torque become actually in the same phase.

6. The motor according to claim 1, wherein said stator has a stator winding of distributed winding or a stator winding of concentrated winding.

7. A driving unit equipped with a motor according to any one of claims 1 to 6, and a fuel cell as power supply for said motor.

8. An electric vehicle comprising a driving unit according to claim 7.

9. A hybrid electric vehicle, comprising:

electric energy storing means of storing electric power;

a motor for driving through the use of electric power of said electric energy storing means;

motor control means of controlling said motor;

a power regulator provided between said motor and said electric energy storing means, for converting their both power;

an engine for driving using fuel; and

engine control means of controlling said engine, wherein said hybrid electric vehicle being traveling through the use

of a driving force of said motor and a driving force of said engine, and

wherein said motor has:

(1) a rotor comprising a first rotator portion having a permanent magnet and a second rotator portion having magnetic saliency coupled in the direction of a rotating shaft; and

(2) a stator which generates magnetic a field for driving said rotor.

10. The hybrid electric vehicle according to claim 9, wherein said first rotator portion and said second rotator portion are coupled at such a mechanical angle that a current phase with which maximum torque of said first rotator portion occurs, and a current phase with which maximum torque of said second rotator portion occurs become actually in the same phase.

11. The hybrid electric vehicle according to claim 9 or 10, further comprising:

abnormality monitoring means of monitoring occurrence of an abnormal state in said electric energy storing means; and

power regulator control means of controlling an operation of said power regulator on the basis of a signal from said abnormality monitoring means.

12. The hybrid electric vehicle according to claim 11, wherein said abnormality monitoring means has at least one means, of voltage monitoring means of monitoring voltage of said energy storing means, current monitoring means of monitoring current of said energy storing means, temperature monitoring means of monitoring temperature of said energy storing means, and power regulator monitoring means of monitoring abnormality of said power regulator.